

DUAL MODE NAVIGATION SYSTEM

This is a continuation-in-part of application serial number 09/814,054 filed March 22m 2001, entitled +NON-COMPUTING NAVIGATION SYSTEM"

STATEMENT OF INVENTION

This invention generally relates to improvements in navigation systems for driver operated vehicles, and more particularly to such systems that provide different modes of instruction for guiding the vehicle.

BACKGROUND

Presently available navigation systems compute a travel route to a selected destination and guide the vehicle along such route by issueing step-by-step audible instructions identifying the roads to be followed and the turns to be made at road intersection. Such systems also provide a visually displayed map on the system receiver. However, the visual map cannot be safely viewed by the driver while the vehicle is proceeding without the driver averting his vision from the road ahead of the vehicle since the navigation receiver is customarily located on, or above, the vehicle dashboard to the side of the driver.

SUMMARY OF THE INVENTION

According to the invention there is provided a navigation system

having two different modes for instructing the driver. In one mode, the system issues step-by-step audible instructions to follow a computed travel route. In a second mode, the system guides the driver using direction information alone, providing a map-free display continually showing only the location of the vehicle referenced to the fixed location of a selected destination. Accordingly the driver is continually guided by the audible instructions and can also visually observe the vehicle's changeable location referenced to that of his selected destination. In the event of road repairs, traffic congestion, required road detours, or other changes or delays in the travel route computed by the navigation system, the driver can rely only on the visual mode to directionally guide the vehicle to avoid the road obstacles or delays.

Additionally according to the invention, there is provided an externally viewable speed meter or speedometer for the vehicle, that continuously displays the speed of travel of the vehicle to other nearby drivers and police. This speed display outside the vehicle serves to deter many drivers from violating the traffic laws by speeding or other violation since others can see the extent of the violations revealed by the external meter.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic illustration showing a preferred embodiment of the two mode guidance system according to the invention,

FIG. 2 is a plan view illustrating external display of the vehicle's speed.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to FIG. 1, a preferred system includes a conventional navigation system for vehicles that includes a receiver 10 that receives radio transmissions 11 from G.P.S. satellites to detect the location of the vehicle, and provides a display screen 20 continually showing a map of the zone location of the vehicle. The map is recorded in a ROM or DVD disc within the system and downloaded in response to the received G.P.S. signals. Such known systems are also programmable by the driver to select a desired location for the vehicle to reach , and to compute a travel route for the vehicle to follow to reach said destination.

To guide the vehicle along the computed travel route, such systems conventionally include an audible generator 12 that issues audible instructions for the driver to follow, identifying the streets and roads along the travel route and the intersections to make turns along said route.

According to the invention, there is provided a second mode of guidance to visually display to the driver in a continuous manner the direction and distance to be followed to reach the desired destination. As shown the navigation system receiver 10 directs signals to externally energize a location analyzer 14 that ,in turn, energizes a heads-up display projector 15 for the vehicle. The location analyzer 14 continually detects the current location of the vehicle and the fixed location of the selected destination chosen by the driver and energizes the projector 15 to display these two locations as discrete markings 17 and 18 on the front windshield 16 of the vehicle directly in the view of

the driver, along with a display of the north south- east west compass heading 21 of the vehicle. As the vehicle travels closer to the the destination location, the two displayed markings are seen to converge toward one another whereas if the vehicle travels away from a correct heading, the markings are seen to diverge away from each other , Thus the front windshield display 16 provides a simplified, uncluttered, map free showing that continually informs the driver of the direction to drive the vehicle to reach the selected destination. The windshield display 16 is preferably projected in in semi-transparent form to provide minimized interference with the driver's safe vision of the road ahead of the vehicle.

As is apparent to those skilled in the navigation system field, the present invention provides a number of advantages over presently available systems. In the event that the road ahead is blocked by repairs, accidents, traffic congestion or detours, the driver can abandon the defined travel routing calculated by the system, and instead select any available routing to circumvent the road obstructions or delays and be guided toward the selected destination by direction alone , following the visible windshield display 16 together with the compass display 21. Where the driver follows the audible instructions from the system generator 12, the driver is also continuously informed of the vehicles relative location referenced to the destination using the windshield distance and direction display 16. Thus the driver can use either or both modes of guidance in piloting the vehicle, or can use one of the modes as a supplement to the other mode.